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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/727,854	12/04/2003	Craig Andrews	LYNN/0161	7862
24945	7590	09/13/2007	EXAMINER	
STREETS & STEELE			WILLS, MONIQUE M	
13831 NORTHWEST FREEWAY				
SUITE 355			ART UNIT	PAPER NUMBER
HOUSTON, TX 77040			1745	
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			09/13/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/727,854	Applicant(s) ANDREWS ET AL.	
	Examiner Monique M. Wills	Art Unit 1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 June 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-76 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-76 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>6/14/04</u> . | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

Election/Restrictions

Applicant's election without traverse of polyamide in the reply filed on June 25, 2007 is acknowledged. Claims 1-76 are pending in the application.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-15 are rejected under 35 U.S.C. 102(b) as being anticipated by Cisar et al. U.S. Pat. 6,638,657.

Cisar teaches a bipolar comprising: a fluid barrier; a sealing frame formed around a perimeter of the fluid barrier, wherein the frame is formed by injecting a polymer into a mold overlapping the perimeter of the fluid barrier (see col. 3,

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lines 30-40). The fluid barrier is metal (col. 4, lines 50-60). The fluid barrier is a material selected from titanium and is plated with a metal (col. 4, lines 50-60). The metal is gold, (col. 4, lines 55-60). The first side of the fluid barrier has an anode flow field; a second side of the fluid barrier having a cathode flow field (col. 4, lines 40-50). With respect to the anode flow field and the cathode flow field being attached to the fluid barrier before the sealing frame is formed around the perimeter, the limitation is satisfied as Cisar makes the same bipolar plate structure set forth by Applicant. See column 4, lines 50-60. The limitations of claims 7-8 are process limitations, and although the limitations have been considered they do not impart patentability so long as the resulting structure is the same. In the instant case, the bipolar plate of Cisar is identical to Applicants. With respect to chemically etching the fluid barrier, the limitation is a process limitation in a product claim. Although the limitations have been considered they do not impart patentability so long as the resulting structure is the same. In the instant case, the bipolar plate of Cisar is identical to Applicants. The anode flow field and the cathode flow field are formed from a material selected from expanded metal mesh (col. 4, lines 50-60). The bipolar plate also contains first gasket to provide a sealing surface between a first side of the sealing frame and a first membrane and electrode assembly; a second gasket to provide a sealing surface between a second side of the sealing frame

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and a second membrane and electrode assembly. See col. 6, lines 10-25. The bipolar plate also contains fluid manifolds (col. 6, lines 10-16), the components. With respect to the polymer being thermoplastic, it is reasonable to expect the polymer to be thermoplastic as the polymer maintains structural integrity in high temperature fuel cell environments.

Therefore, the instant claims are anticipated by Cisar.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 17-32, 34-62 & 64-76 rejected under 35 U.S.C. 103(a) as being unpatentable over Cisar et al. U.S. Pat. 6,638,657.

Cisar teaches a bipolar comprising: a fluid barrier; a sealing frame formed around a perimeter of the fluid barrier, wherein the frame is formed by injecting a polymer into a mold overlapping the perimeter of the fluid barrier (see col. 3, lines 30-40). The fluid barrier is metal (col. 4, lines 50-60). The fluid barrier is a material selected from titanium and is plated with a metal (col. 4, lines 50-

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60). The metal is gold, (col. 4, lines 55-60). The first side of the fluid barrier has an anode flow field; a second side of the fluid barrier having a cathode flow field (col. 4, lines 40-50). With respect to the anode flow field and the cathode flow field being attached to the fluid barrier before the sealing frame is formed around the perimeter, the limitation is satisfied as Cisar makes the same bipolar plate structure set forth by Applicant. See column 4, lines 50-60. The limitations of claims 27-28, 54, 56-58 are process limitations, and although the limitations have been considered they do not impart patentability so long as the resulting structure is the same. In the instant case, the bipolar plate of Cisar is identical to Applicants. With respect to chemically etching the fluid barrier, the limitation is a process limitation in a product claim. Although the limitations have been considered they do not impart patentability so long as the resulting structure is the same. In the instant case, the bipolar plate of Cisar is identical to Applicants. The anode flow field and the cathode flow field are formed from a material selected from expanded metal mesh (col. 4, lines 50-60). The bipolar plate also contains first gasket to provide a sealing surface between a first side of the sealing frame and a first membrane and electrode assembly; a second gasket to provide a sealing surface between a second side of the sealing frame and a second membrane and electrode assembly. See col. 6, lines 10-25. The bipolar plate also contains fluid manifolds (col. 6, lines 10-16), the components.

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With respect to the polymer being thermoplastic, it is reasonable to expect the polymer to be thermoplastic as the polymer maintains structural integrity in high temperature fuel cell environments. With respect to the method of bonding the sealing frame, the limitations are process limitations, and although the limitations have been considered they do not impart patentability so long as the resulting structure is the same. In the instant case, the bipolar plate of Cisar is identical to Applicants.

However, Cisar does not expressly disclose: the cathode sealing frame and anode sealing frame bonded to form a fluid seal (claim 21); a third gasket to provide a sealing surface between the cathode sealing frame and the anode sealing frame (claim 40); cooling frame adapted to receive a perimeter of a cathode side of the anode fluid barrier (claim 47) and a fourth gasket seal (claim 70).

However, it would have been obvious to one of ordinary skill in the art at the time the instant invention was made to form a sealing frame bond between the anode and cathode frames, in order to obviate leakage of fuel cell reactants.

With respect to the cooling frame, it would have been obvious to one of ordinary skill in the art to employ a cooling frame in order to control temperature variations in the fuel cell stack.

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With respect to the third and fourth gasket seals, it would have been obvious to one of ordinary skill in the art at the time the instant invention was made to employ multiple sealing gaskets as duplication of parts of essential working components of a device are prima facie obvious. With respect to fuel cells, multiple gasket seals ensure that the proper stoichiometric amounts of reactant are retained in the fuel cell for optimal operational efficiency.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 16, 33 & 63 rejected under 35 U.S.C. 103(a) as being unpatentable over Cisar et al. U.S. Pat. 6,638,657 in view of Wakamatsu US. 6,231,053.

Cisar teaches a bipolar plate as described hereinabove. However, the reference does not expressly disclose a polyamide polymer frame.

Wakamatsu teaches that it is conventional to employ polyamide polymer frames (col. 3, lines 45-55).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the instant invention was made to employ the polyamide polymer frame

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of Wakamatsu in the fuel cell of Cisar, in order to improve structural integrity of the cell and obviate leakage of reactants from the fuel cell.

Conclusion

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Monique Wills whose telephone number is (571) 272-1309. The Examiner can normally be reached on Monday-Friday from 8:30am to 5:00 pm.

If attempts to reach Examiner by telephone are unsuccessful, the Examiner's supervisor, Patrick Ryan, may be reached at 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.


Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR.

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Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MW

9/1/07


JONATHAN CREPEAU
PRIMARY EXAMINER